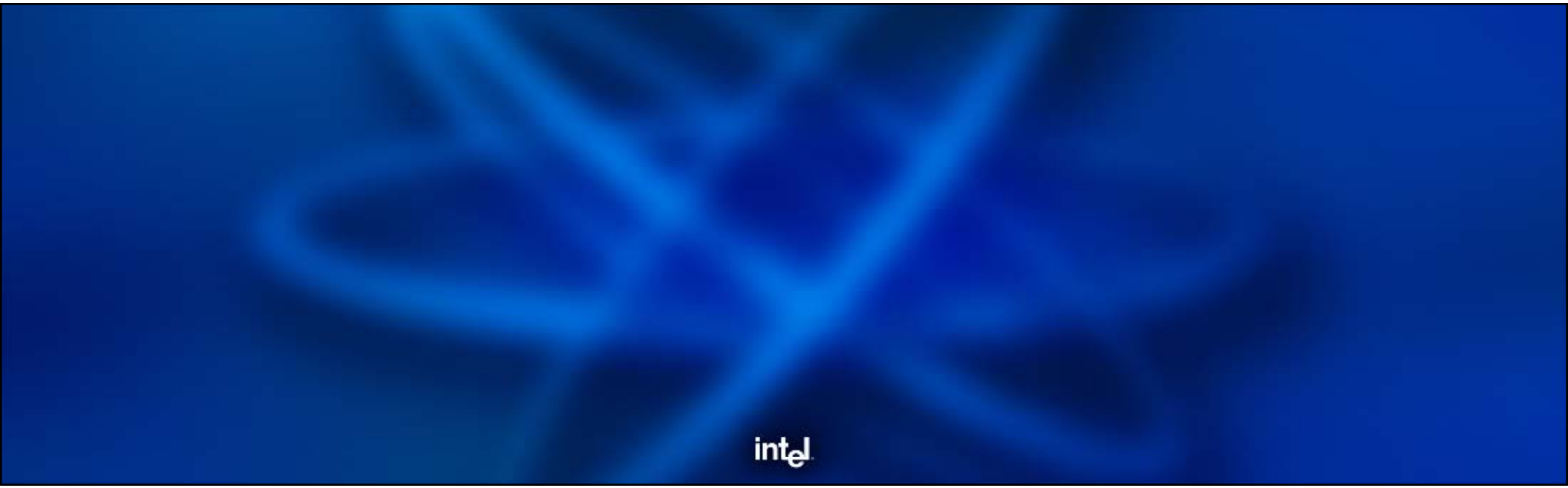

intel


Communications Infrastructure
The Evolution of Convergence
Eric Mentzer, Vice President, Intel Communications Group // Intel Corporation

A Infrastructure View of Convergence



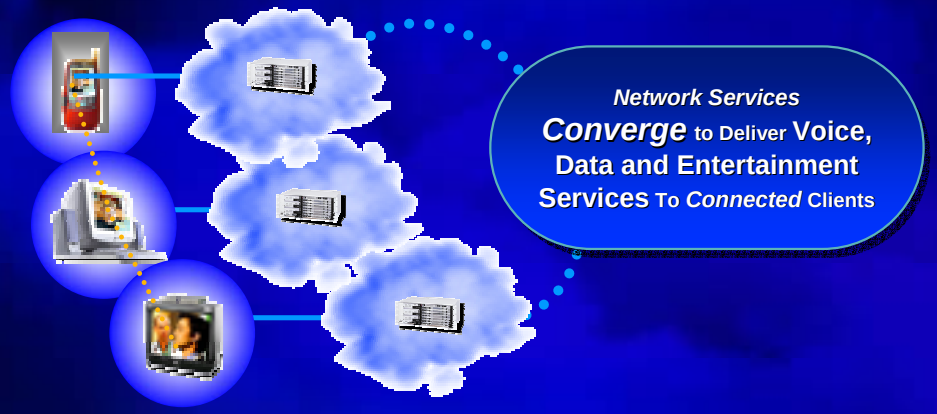
We started with
separate networks and
dedicated devices

The Networks Connected

Enabling the Clients to Converge

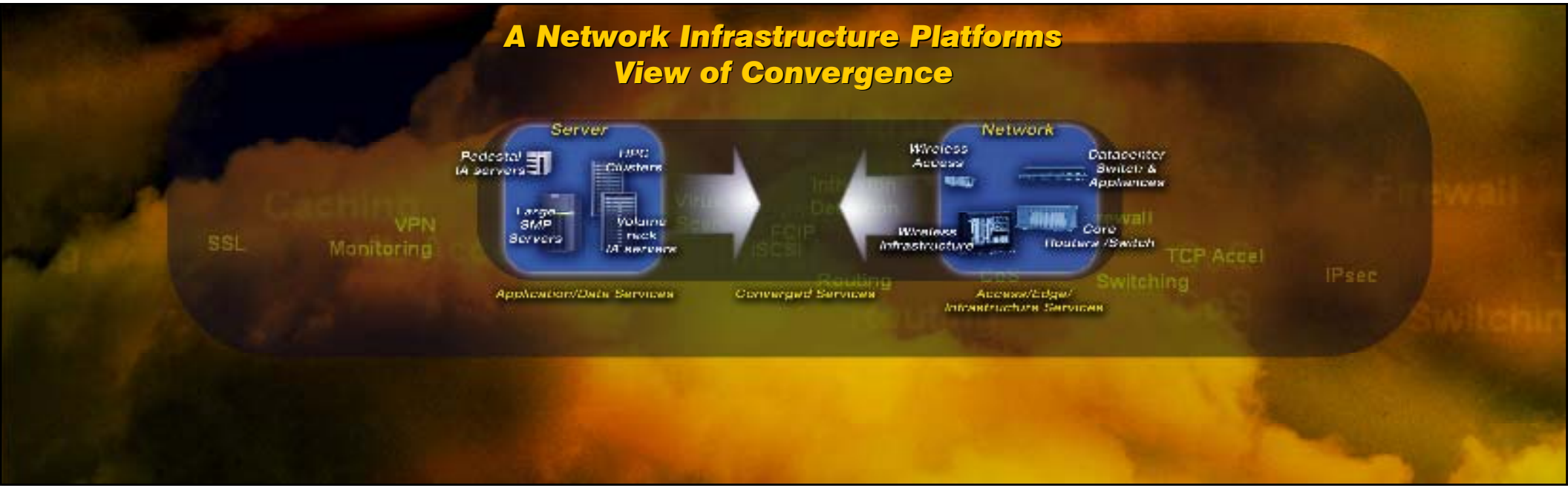


The Network Services are Now Converging



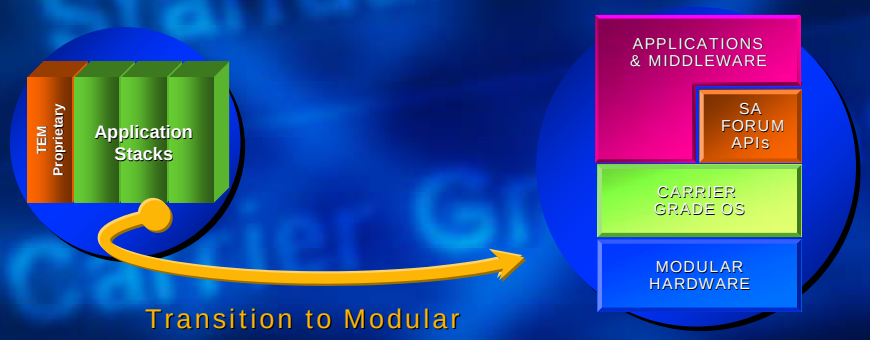
Network Services
Converge to Deliver Voice, Data and Entertainment Services To *Connected* Clients

A Network Infrastructure Platforms View of Convergence




What Will It Take to
Make Convergence Happen?
Modular Communications Platforms
Catalyst

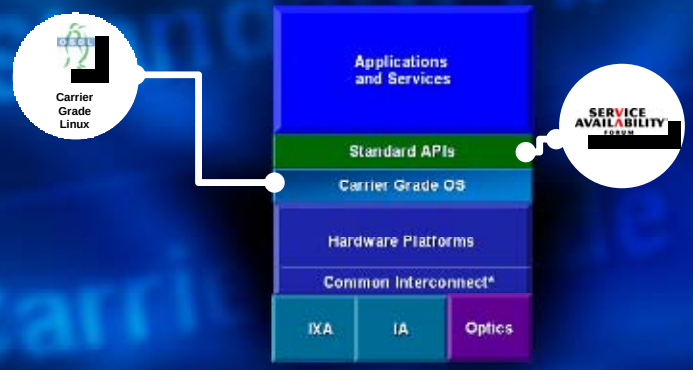
Standards and Foundations of Modularity



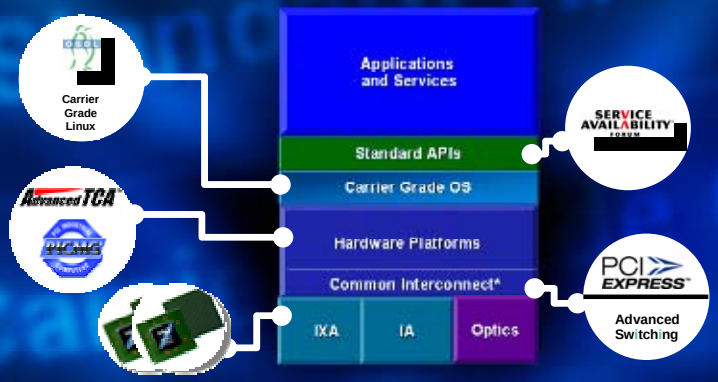
Standards and Foundations of Modularity



Standards and Foundations of Modularity



Standards and Foundations of Modularity



AdvancedTCA™ Progress

Interoperability Workshops

PICMG 3.0 Ratified 12/02

AdvancedTCA™

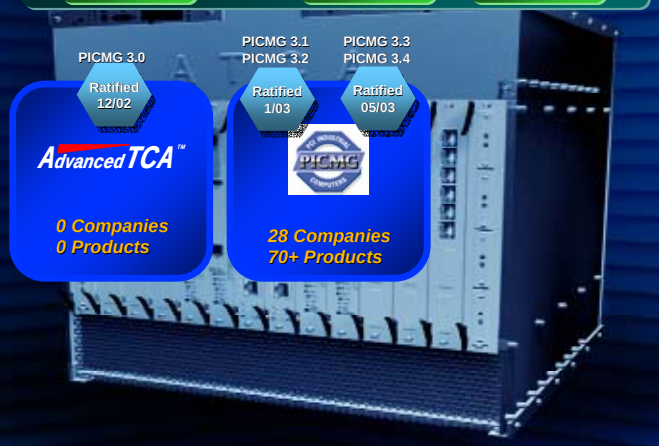
0 Companies
0 Products



AdvancedTCA™ Progress

May '03 | Sept '03

Interoperability Workshops | #4 Full Mgmt | #5 Backplane



PICMG 3.0
Ratified 12/02
AdvancedTCA™
0 Companies
0 Products

PICMG 3.1
PICMG 3.2
Ratified 1/03
PICMG 3.3
PICMG 3.4
Ratified 05/03
PICMG
28 Companies
70+ Products

AdvancedTCA™ Proof Points

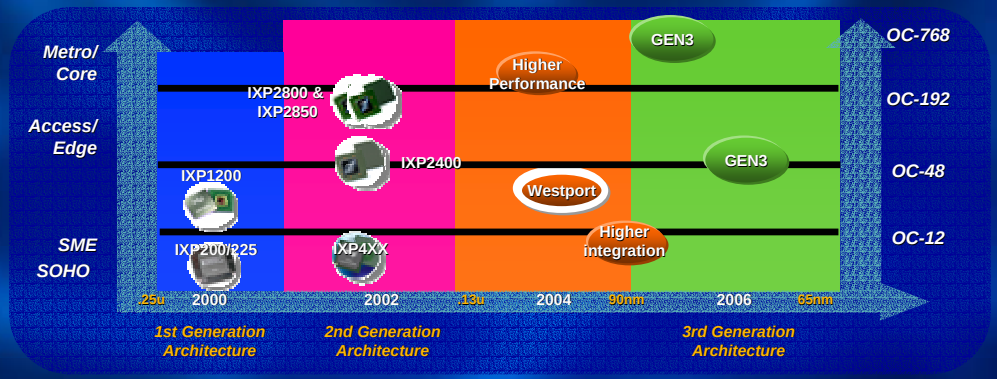


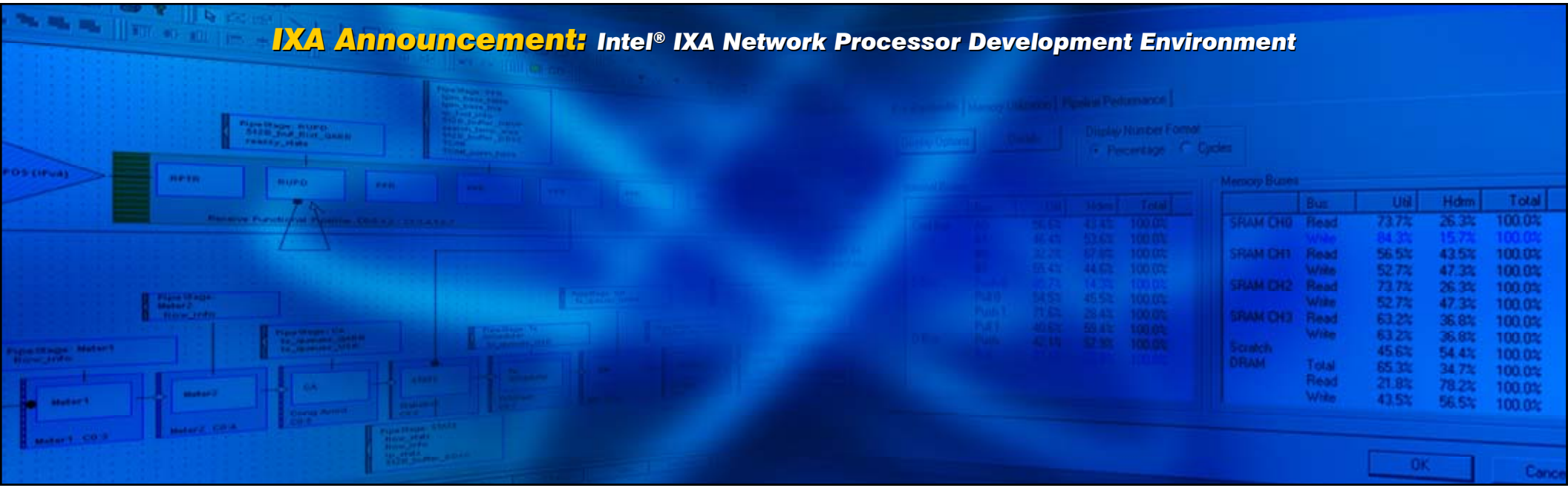

FIRST
FIRE SHUTTERS
SEE SPEC.

IXA Progress



IXA Progress




IXA Announcement: Intel® IXA Network Processor Development Environment
Memory Buses
Bus
Util
Hdrm
Total
SRAM CH0
Read
73.7%
26.3%
100.0%
Write
84.3%
15.7%
100.0%
SRAM CH1
Read
56.5%
43.5%
100.0%
Write
52.7%
47.3%
100.0%
SRAM CH2
Read
73.7%
26.3%
100.0%
Write
52.7%
47.3%
100.0%
SRAM CH3
Read
63.2%
36.8%
100.0%
Write
63.2%
36.8%
100.0%
Scratch DRAM
45.6%
54.4%
100.0%
Total
65.3%
34.7%
100.0%
Read
21.8%
78.2%
100.0%
Write
43.5%
56.5%
100.0%
OK

IXA Announcement: Intel® IXA Network Processor Development Environment



Hardware Development Platforms

- IXDP2401, IXDP2801, IXDP2851



Intel® IXP2XXX Architecture Tool



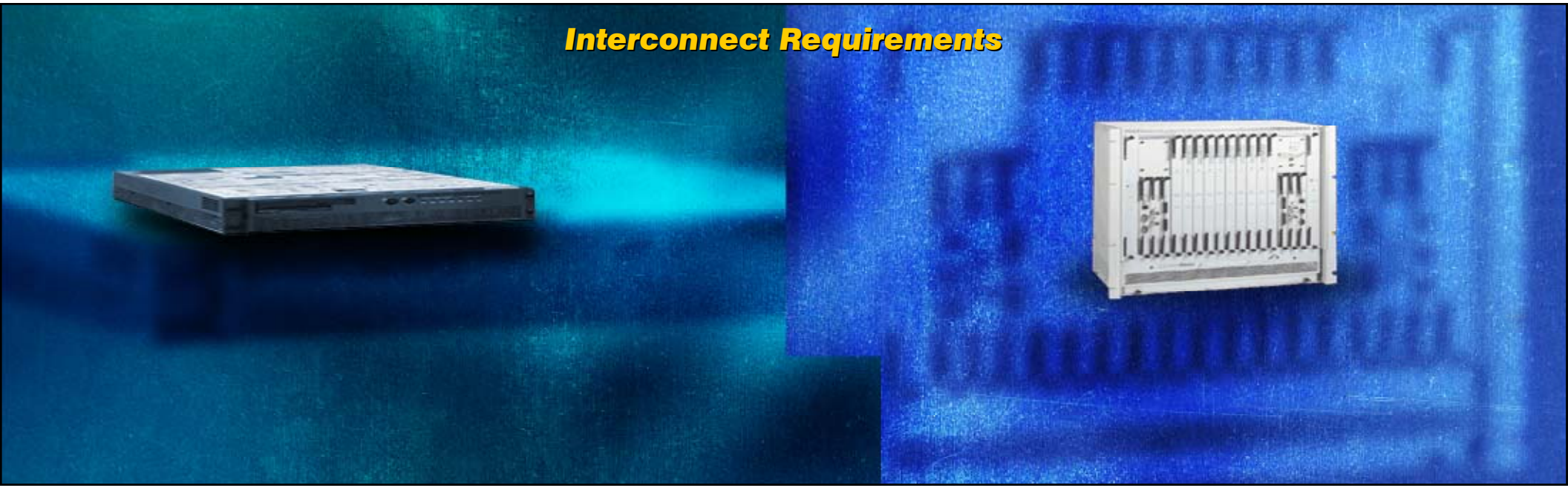
Intel® IXA Software and Services

- Example designs and application kits
- Communications software services


FIRST
FIRE SHUTTERS
SEE SPEC.


FIRST
FIRE SHUTTERS
SEE SPEC.

Interconnect Requirements



Interconnect Requirements

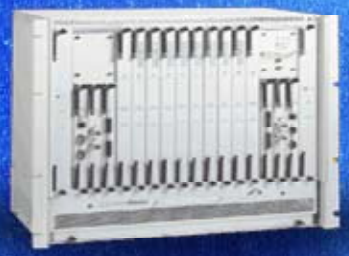
1) Local Interconnect

- Connect chips on a board and add in cards



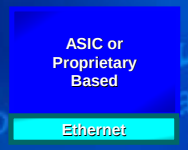
2) System Fabric

- Connect boards across a backplane



Advanced Switching

Extends the Utility of PCI Express into peer-to-peer switched Interconnects for backplane fabrics

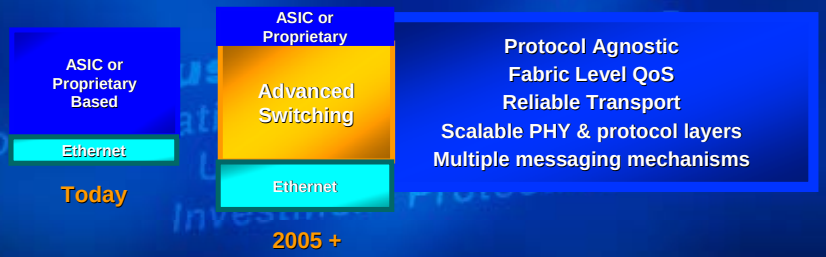


Today

ustry Imperatives
ations/Computing Convergence
Universal Adoption
Investment Protection

Advanced Switching

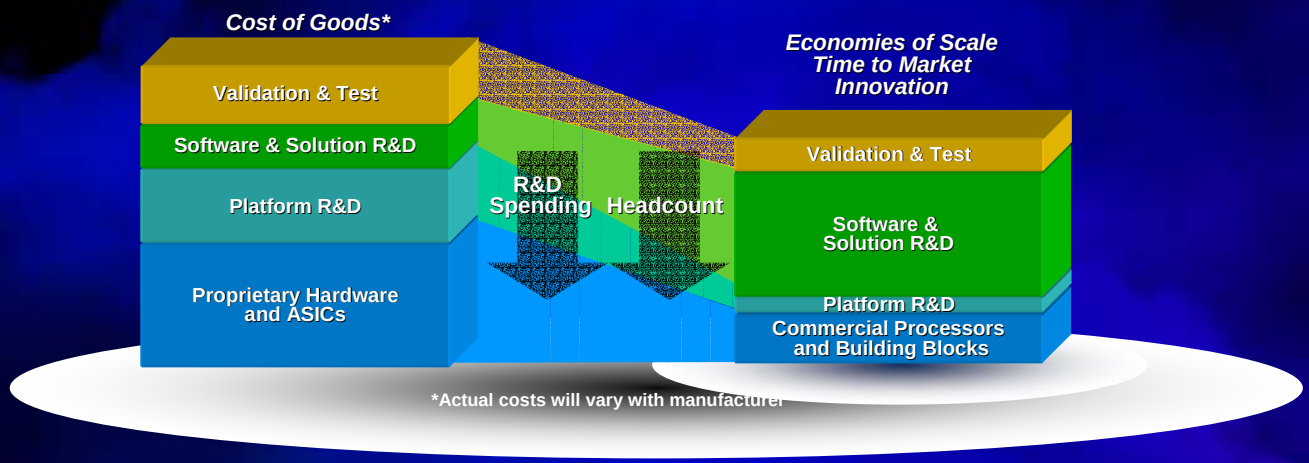
Extends the Utility of PCI Express into peer-to-peer switched Interconnects for backplane fabrics

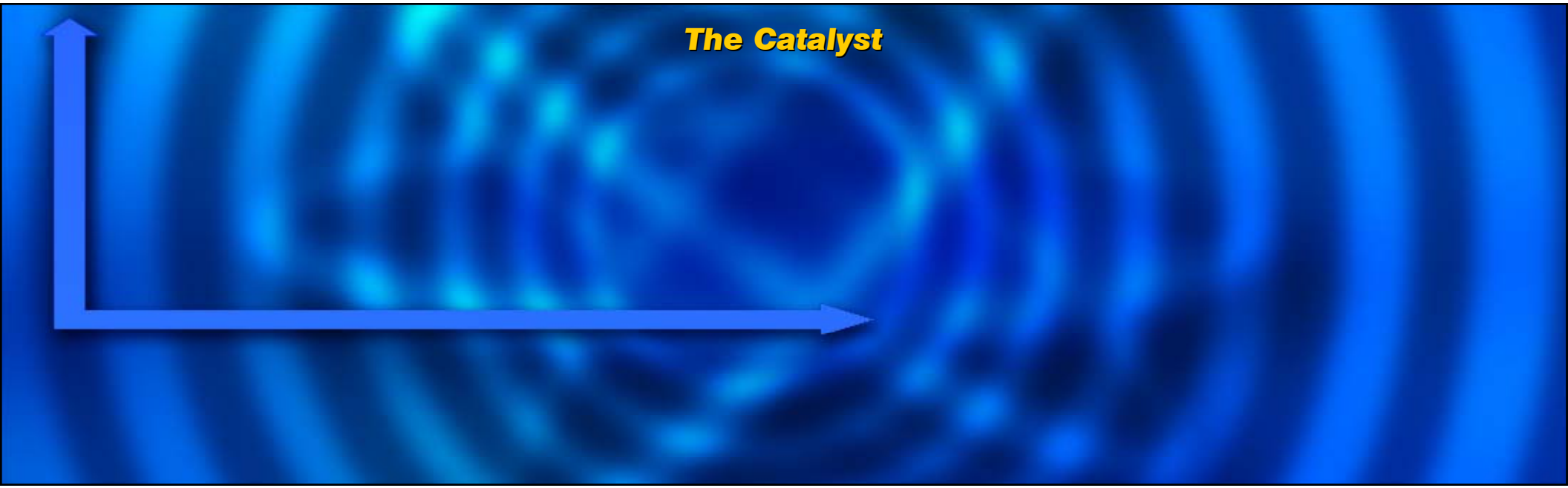



FIRST
FIRE SHUTTERS
SEE SPEC.

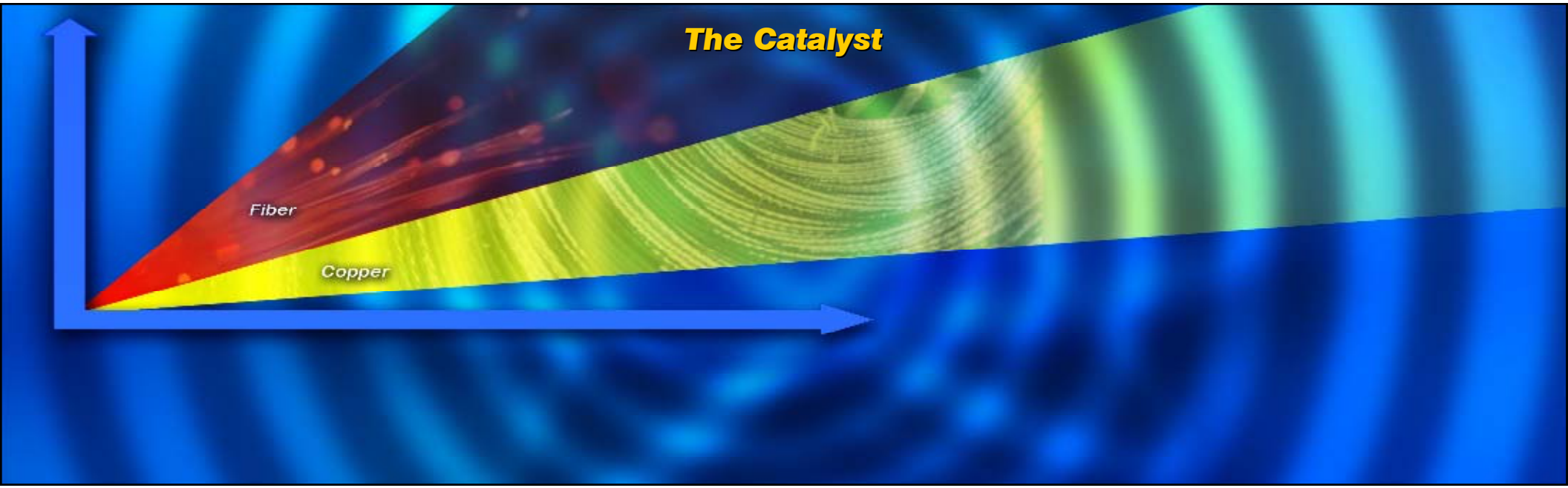

Impact of Modular
Communications Platforms

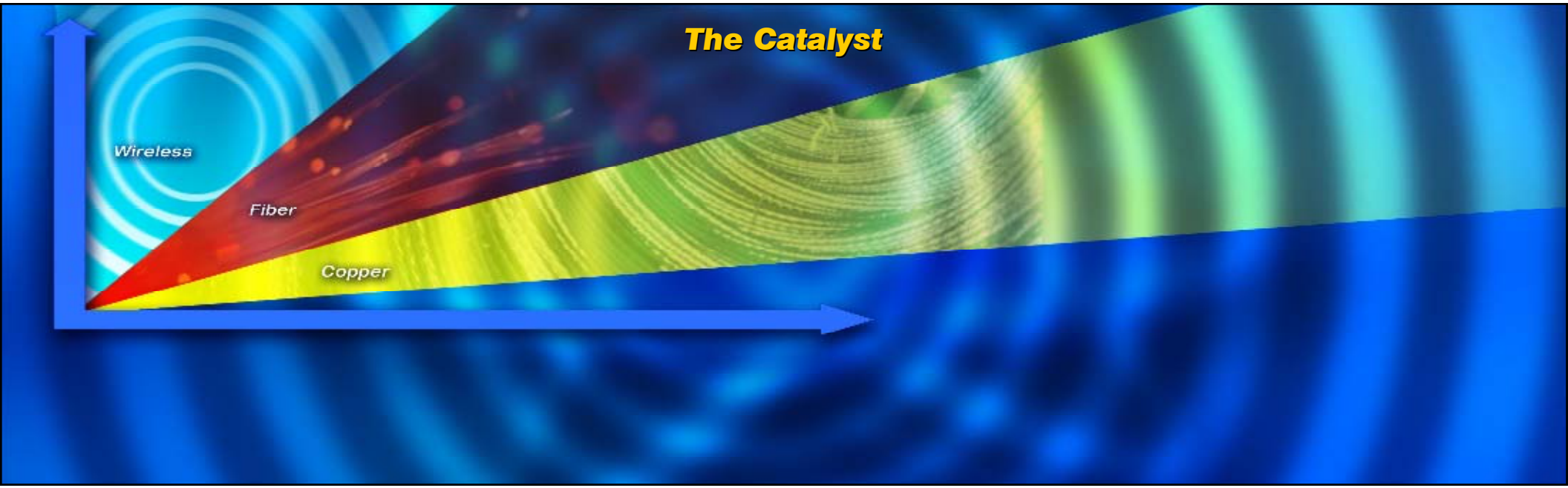
Impact of Modular Communications Platforms



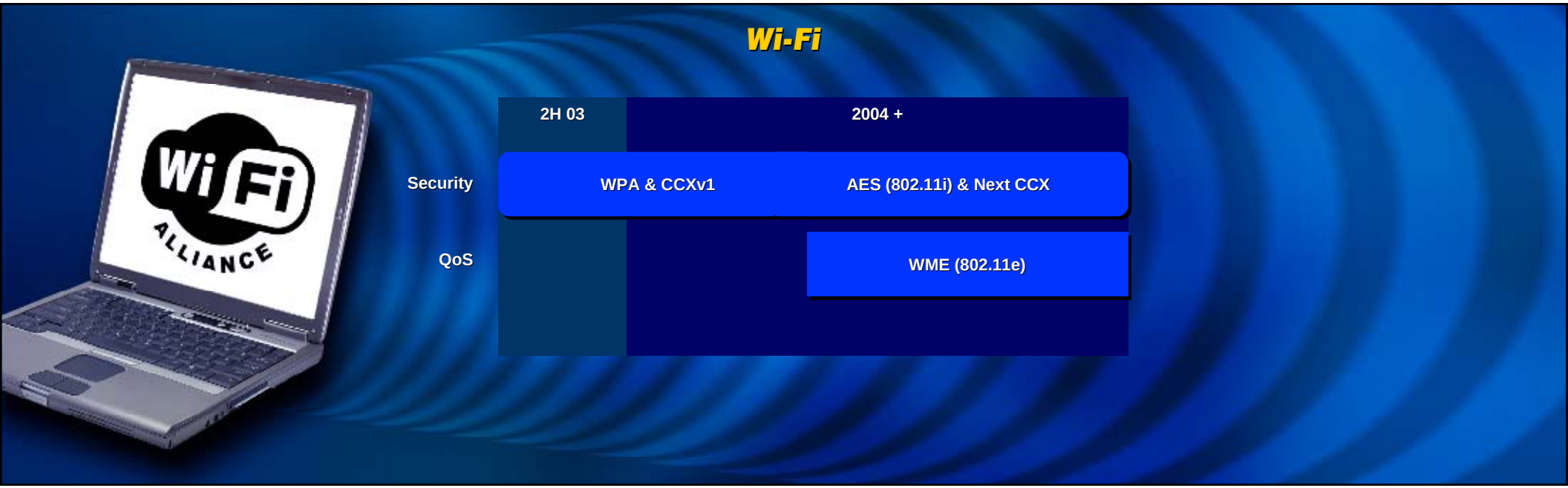

The Catalyst


The Catalyst
Copper


The Catalyst
Fiber
Copper


The Catalyst
Wireless
Fiber
Copper

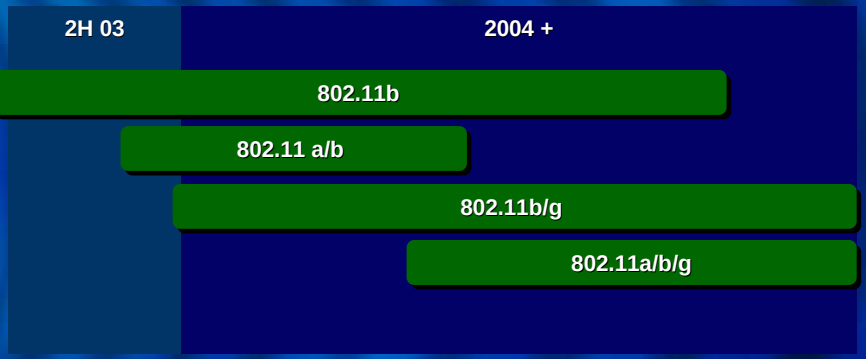

The Catalyst
Wireless
Fiber
Copper
WiFi Estimates Rise...
Our Wireless Direction...
Wireless Takes Flight
[unwire]


Wi-Fi
2H 03
2004 +
Security
WPA & CCXv1
AES (802.11i) & Next CCX
QoS
WME (802.11e)
Wi Fi
ALLIANCE

Wi-Fi



Wi-Fi Radio Technology



Wi-Fi



Wi-Fi Radio Technology

2H 03	2004 +
	Calexico 1 Silicon
	802.11b/g
	802.11a/b/g

Wi-Fi



Wi-Fi Radio Technology

2H 03	2004 +
Calexico 1 Silicon	
	Calexico 2 Silicon

Wi-Fi



Wi-Fi Radio Technology

2H 03	2004 +
Calexico 1 Silicon	
Calexico 2 Silicon	Almagor Silicon

Wi-Fi



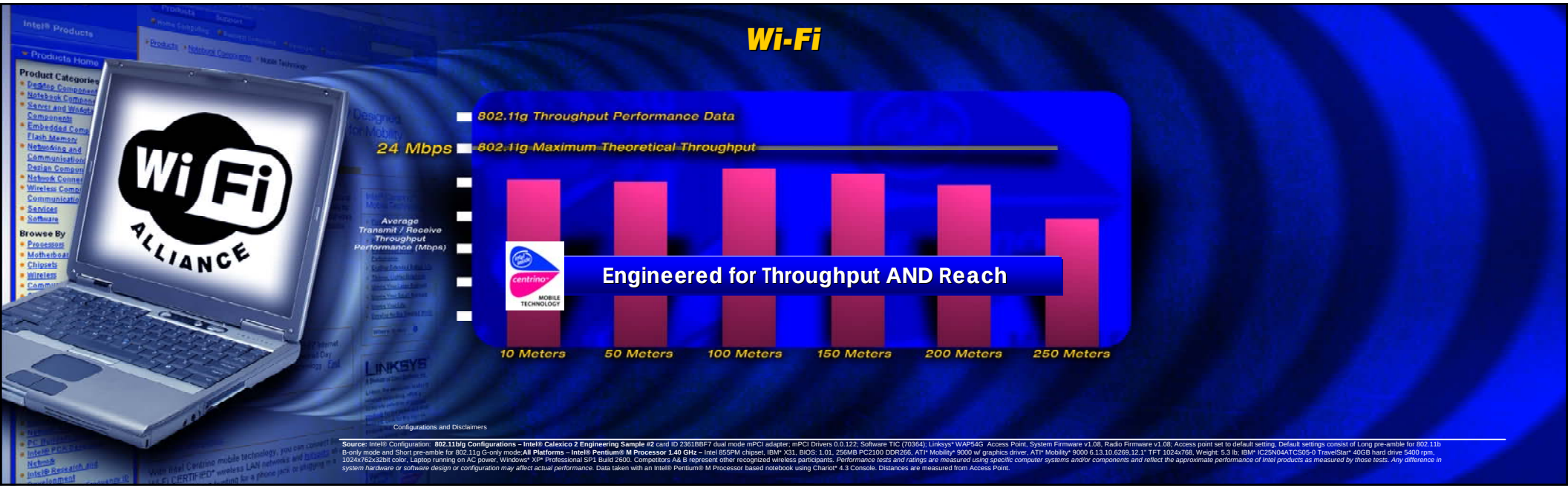
	2H 03	2004 +
WLAN Software	Intel® PROSet/Wireless Software – Advanced Wi-Fi mgmt, Security, and Profile Selection	Advanced EOU and Connectivity

Wi-Fi



2H 03	2004 +
Intel® PROSet/Wireless Software – Advanced Wi-Fi mg	Intel Next Generation Modular Framework
	A

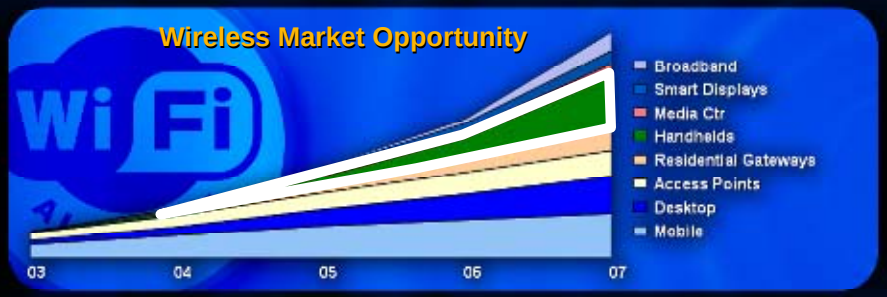
Wi-Fi



Configurations and Disclaimers

Source: Intel® Configuration: **802.11b/g Configurations – Intel® Calexico 2 Engineering Sample #2** card ID 2361BBF7 dual mode mPCI adapter; mPCI Drivers 0.0.122; Software TIC (70364); Linksys* WAP54G Access Point, System Firmware v1.08, Radio Firmware v1.08; Access point set to default setting, Default settings consist of Long pre-amble for 802.11b B-only mode and Short pre-amble for 802.11g G-only mode;**All Platforms – Intel® Pentium® M Processor 1.40 GHz –** Intel 855PM chipset, IBM* X31, BIOS: 1.01, 256MB PC2100 DDR266, ATI* Mobility* 9000 w/ graphics driver, ATI* Mobility* 9000 6.13.10.6269,12.1" TFT 1024x768, Weight: 5.3 lb, IBM* IC25N04ATCS05-0 TravelStar* 40GB hard drive 5400 rpm, 1024x762x32bit color, Laptop running on AC power, Windows* XP* Professional SP1 Build 2600. Competitors A& B represent other recognized wireless participants. *Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance.* Data taken with an Intel® Pentium® M Processor based notebook using Chariot* 4.3 Console. Distances are measured from Access Point.

Expanding Wi-Fi Into New Segments



- Wi-Fi technology growing in low power handheld and PDA devices
 - Complement to Intel PCA
- New set of product requirements → form-factor, real-estate, coexistence
- Next step for Intel wireless


The Next Frontier: Broadband Wireless


The Next Frontier: Broadband Wireless
Business Access and Backhaul


The Next Frontier: Broadband Wireless
Business Access and Backhaul
Consumer Broadband Access

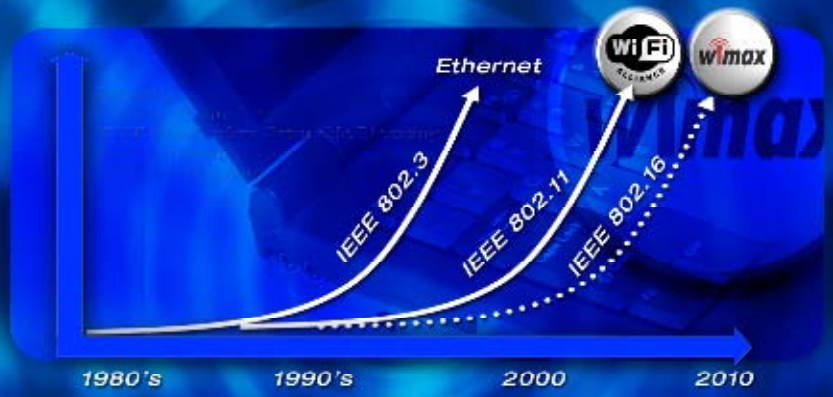

The Next Frontier: Broadband Wireless
Business Access and Backhaul
Hotspot Back Haul
IEEE 802.16a
Non Line of Sight
Point to Multi-point
Wi-Fi
Consumer Broadband Access

What is IEEE 802.16a?

- Standard completed Jan03
- 2-11Ghz, licensed and unlicensed
- Up to 75Mbps
- Up to 30 Miles, non line of sight
- QOS for voice, video and differentiated service levels
- Scalable to 1000’s of users with a single basestation



The Path to Volume Economics




wimax
Intel's target is to be first to market with the integrated
MAC/PHY 802.16a WiMAX certified standard silicon in 2nd Half 2004

WiMAX

- **Wi-Fi and Wireless Equipment Manufacturers:**
 Join WiMAX and Participate in interoperability testing in 2004
- **Service Providers and Wireless ISP's:**
 Plan trials for WiMAX based services in 2004
- **End Users:**
 WiMAX certified solutions will exist in 2005


Industry Opportunity....
Deliver the converged services with Modular Communications Platforms
Accelerate convergence with Wi-Fi and WiMAX
Wi Fi
ALLIANCE
wimax